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STUDIES IN NEOTROPICAL MALLOPHAGA — N° IV¹

New Genera and Species

by

M. A. Carriker, Jr.

Genus MACHAERILAEMUS Harrison.

Parasitology, 1915, Vol. VII, N° 4, p. 389. (Genotype: *M. latifrons* Harrison). Clay and Meinertzhagen, Annals and Mag. of Nat. Hist., Ser. 11, Vol. VII, p. 330.

The genotype of this rare genus, although parasitic on the Australian Grass Finch (*Poephila gouldiae*) is superficially remarkable like several species of the genus found in Central and South America, and parasitic on such widely diverse families as the *Formicariidae* and *Tyrannidae*.

Other species, without a perforated gular plate, have also been taken on North and South American hosts of the families *Fringillidae*, *Tyrannidae*, *Furnariidae* and *Hirundinidae*.

Clay and Meinertzhagen claim that the genus *Hirundoecus* Ewing, from one of the Swallows (*Hirundinidae*) cannot be separated from *Michaerilaemus*. I have seen no specimens of

1 — N° III of Studies in Neotropical Mallophaga is now being published by the U. S. National Museum of Washington, D. C., and will be available soon. It treats exclusively the Mallophaga of the Tinamous.

The drawings published in the present paper have all been made by the author, and are mathematically correct in every way. Mention has been made where any figure is incorrect or questionable. Measurements are all in millimeters and have all been made direct from the insect by means of a properly calibrated eyepiece micrometer. (M. A. Carriker, Jr.)

Hirundoecus, and can only follow Clay and Meinertzhagen in the matter, since they have apparently given sufficient proof of their contention. The same authors have given a re-characterization of the genus, amplifying Harrison's original description to include species which have been discovered subsequent to its publication.

In the present paper are described seven additional species of this rare and interesting genus, which present but one characteristic not agreeing wholly with the re-characterization given by Clay and Meinertzhagen. This character is the Y-shaped dorsal suture on the head, which proves to be *absent*, or at least so completely fused that it is invisible, in the two new species here described which have the gular plate perforated, and in another species with this plate entire.

The genus, in spite of its wide-spread distribution, seems to be a very homogenous one, most all of the species being remarkably similar in most characters, yet there is little difficulty in separating most of them. The characters which seem to be the most stable, and the best for their separation are: Gular plate; its size, shape, position on head, and presence or absence of perforation; presence or absence of Y-shaped dorsal suture on head; shape of head, especially the antennal fossae and occipital margin; and lastly the presence and shape of the sternal plates of the three thoracic segments. However these plates are, as a rule very uniform, and I have seen but one species in which the metasternum is absent. The abdomen presents few characters which vary to any degree, although I dare say that a very careful analysis of the abdominal chaetotaxy would reveal stable differences.

Unfortunately there are no males represented in any of the new material described in this paper, that sex seemingly being very rare, or easily overlooked, being very minute (not much more than half the size of the female). The only male I have seen is the ♂ type of *M. laticorpus* (Carriker), which is still in my collection, so that it is not possible to make any comparisons between the ♂ genital armature of the different species. The antennae (not described by Clay and Meinertzhagen) are visible in most of my material. They

consist of four segments, the first two cylindrical, with the 2nd. longer than the 1st, while the 3rd is usually minute, sometimes attached at the end of the 2nd sometimes at one side of the end (see figs.), while the fourth is generally the largest, being as long or longer than the 2nd, and usually thicker, and is elongated oval in shape. Without dissection it is not possible to figure them completely accurate in every detail., especially the two apical segments, which are usually covered by deeply pigmented integument.

Machaerilaemus laticorpus (Carriker).

Plate I, figs. 1, 2 and 3.

Menopon laticorpus Carriker, Univ. Studies, Univ. Nebraska, Vol. III, N° 2, April, 1903, p. 68; Pl. VII, fig 5 (Host: *Thamnophilus doliatus mexicanus*, Juan Viñas, Costa Rica).

Machaerilaemus laticorpus (Carriker), Clay and Meinertzhagen, Ann. and Mag. Nat. Hist., Ser. 11, Vol. VII, p. 331, April, 1941; text fig. 1.

Little need be added to the original description of this species, except a more detailed description of the ♂ genitalia and fuller measurements, which appear below, as well as a large scale drawing of the head and thorax.

In the Article by Clay and Meinertzhagen (cited above) a figure is given of the head of what is purported to be *M. laticorpus*, with no reference as to the origin of the specimen from which the drawing was made. The authors of this paper have not seen the types of *laticorpus*, which have never left my possession, and from all appearances the specimen from which their published drawing was made is not *laticorpus*. A careful comparison of their figure with the one herewith given of the ♀ type of *laticorpus* will show that they represent two distinct species.

The general shape of the head is very similiar, as well as the chaetotaxy and the shape of the antennal fossae, although the latter differ slightly; but the most striking differences are in the shape and location of the gular plate and

in the *entire absence* of the Y-shaped dorsal suture in *laticorpus*, in both male and female. There is not the slightest trace of this suture, even under high magnification.

Modern students of Mallophaga have proven conclusively that it is a very dangerous procedure to describe any known species which was not taken on the *type host*. Dr. Hopkins has reiterated this statement, citing specific cases where errors and complications have ensued by so doing, and I can only corroborate his statements.

I have cleared the types of this species, so that they can now be studied in all details, and the antennae are clearly visible, a figure of which is here given. As a result of this study it develops that the 3rd segment of the antennae in the various species of this genus varies considerably, in some being very minute, and in others (*laticorpus* and *robertsi*) well developed, appearing as the shape of an acorn, the 3rd segment being the base in which the acorn (segment 4) rests.

In the ♂ genitalia we have a short, slender basal plate, wider at the distal end, and tapering to its tip. The structure of the endomera is not clear, but it seems to be as shown in the figure, the whole genitalia being delicate and scarcely pigmented, even before the specimen was cleared. The paramers were almost entirely extruded from the abdomen, and fortunately the drawing of them was made before the specimen was cleared, since in the process of demounting and clearing their tips were broken off.

Measurements:		♂		♀	
		length	width	length	width
body		1.17	—	1.47	—
head {	ant. fossae .....	.26	{ .44	.26	{ .48
	temples				
prothorax .....		.10	.34	.157	.41
mesothorax .....		.14	.40	.17	.50
metathorax .....		.06	.52	.098	.586
abdomen .....		.69	.57	.87	.76
basal plate .....		.13	.062		
paramers .....		.296			

Machaerilaemus poecilotis sp. nova.

Plate I, fig. 4.

Type, ♀ adult, from *Pogonotricus poecilotis*, collected by the author at Rio Jelashti, Dept. Amazonas, Peru, August 19, 1932. (Type in coll. of the author).

Diagnosis: This species also belongs to the group bearing a perforated gular plate, while it lacks all trace of the Y-shaped dorsal suture on the head.

The head has the characteristic, narrow, submarginal band across the front, while the antennal fossae are encircled on the inner side by a pitchy line, and another such band traverses the occipital margin. The remainder of the head is but lightly pigmented, in sharp contrast to other species (see *atrocephalus* and *maestus*). There is a thin dorsal band crossing the anterior portion of the gular plate, which is attached to the chitinous framework on each side of the head, serving to strengthen the exoskeleton at this point.

The thorax is typical of the genus, also the pitch-colored bands of chitin which lead to the points of attachment for the coxae. These bands are slightly different in the different species and form fairly good secondary characters.

The abdomen is considerably more slender than most species of the genus. The pleural plates are very closely fused with the tergites which are continuous across the abdomen, the former being but slightly more pigmented than the latter, with the line of fusion practically invisible. This species differs from all others of the genus seen by me in the character of the sternal plates of the abdomen. These are, apparently also continuous, from pleurite to pleurite, and there is no trace of the short spines along their posterior border (see fig.), but the spines along the posterior border of the sternal face of the pleurites are present, as in other species. This character alone, serves to distinguish *poecilotis* from all other species treated in this paper. The chaetotaxy of the abdomen is clearly shown in the figure, also the hyaline area which separates the tergites and sternites from each other.

The species is represented by a single female, the type.

Measurements:

♀

	length	width
body	1.39	—
head { ant. fossae .....	.27	{ .49
{ temples		{ .60
prothorax .....	.16	.41
mesothorax .....	.14	.50
metathorax .....	.10	.54
abdomen .....	.82	.61

Machaerilaemus insignis sp. nova.

Plate II, fig. 1.

Type, ♀ adult, from *Ochthoeca rufipectoralis tectricialis*, collected by the author at Huacapistana, Dept. Junin, Peru, Dec. 18, 1929. (Type in coll. of the author).

Diagnosis: This species also belongs to the section of the genus having the gular plate perforated, and also lacks completely the Y-shaped dorsal suture of the head. The front is slightly acuminate, while there is a slight angulation at the middle of the outer margin of the antennal fossae; the dark band across the front of the head is submarginal; there is a pitchy border along the inner margin of the antennal fossae, and along the occipital margin, the latter submarginal. The whole occipital margin is slightly *convex*. The gular plate is wider than long, with four lateral hairs forward of the pointed projections, and two other longer hairs just behind the mandibles. The temples are evenly rounded, and bear four long, strong, pustulated hairs, as well as several shorter ones; there are two strong, submarginal hairs on the dorsal surface, over the posterior portion of the gular plate, and one long pustulated hair and a short bristle just forward of the junction of the prothorax with the head. I have not seen these dorsal hairs on any other species of the genus.

The thorax is of the conventional type, with well developed sternal plates. The abdomen is very similiar to that of *M. juninensis* (see fig.), although the chaetotaxy as shown in

that figure is not complete, there being another series of short hairs across the middle of the sternal plates, while the spines shown in the figure as being on the dorsal surface of the pleurites are in reality on the ventral side; there are also a few stout, short bristles irregularly placed on the ventral surface of the pleurites. The genital plate is indistinct, and somewhat similiar to that of *atrocephalus*. The shape and arrangement of the coxae is somewhat different from the other species, while the femora and tibiae are much as in *juninensis*, but less deeply pigmented. The species is represented by a single specimen, the type.

Measurements:		♀	
		length	width
body		1.46	—
head { ant. fossae	}	.28	{ .47
{ temples			{ .586
prothorax .....		.17	.40
mesothorax .....		.14	.52
metathorax .....		.09	.57
abdomen .....		.89	.74

Machaerilaemus maestus (Kell. & Chap.)

Menopon maestum Kellogg & Chapman, New Mall. III (Mall. from Birds of Cal.), 1899, p. 131; Pl. IX, fig. 2. (Host: *Zonotrichia coronata* and *Melospiza fasciata samuelis*).

I have a single female, taken on the Oregon Towhee (*Pipilo maculatus oregonus*), and identified by the U. S. Bureau of Entom. as being this species.

A careful comparison of this specimen with the original description and figure of *maestus* reveals differences hard to reconcile, and which could not possibly be attributed to individual variation.

Kellogg's description of the chaetotaxy is too meagre to be of much value, but in the figure the arrangement of the

hairs on the abdomen is entirely different from that of the specimen before me, while no mention is made in the description of the short spines at the outer posterior corners of the sternites, nor are they shown in the figure. The pigmentation of the head is also different from that given in the description and figure of *maestus*, although a portion of the difference may be due to my specimen having been cleared. In my specimen the sides of the head are much less pigmented, the quadrangular blackish patch covering the greater portion of this region in *maestus* is reduced to a narrow pitchy band encircling the inner side of the antennal fossae and another across the occipital margin to the edge of the clear portion of the temples, and with rounded projections extending forward from it on each side of the gular plate. In the several species described in this paper, there is, as may be seen from the figures, a considerable difference in the pattern of the pigmentation of the head, so that I am not at all certain but what the present specimen will prove to be distinct from *maestus*, especially since the host, although both belonging to the Fringillidae, are not at all closely related. The matter cannot be definitely determined until specimens of *Machaerilaemus* from the type host of *maestus* can be examined and compared with the present one, or else the type of *maestus*.

Measurements of ♀ from *Pipilo*:

	length	width
body	1.35	—
head { ant. fossae .....	.282	{ .50 .597
{ temples		
prothorax .....	.15	.39
mesothorax .....	.14	.50
metathorax .....	.10	.57
abdomen .....	.92	.67

Measurements of *maestus* by Kellog.

(no sex given, but fig. is of a ♀)

	length	width
body	1.37	—
head { ant. fossae .....	.28	{ — .59
{ temples		
prothorax	—	—
mesothorax	—	—
metathorax	—	—
abdomen	—	.81

Machaerilaemus juninensis sp. nova.

Plate I, fig. 5.

Type, ♀ adult, from *Agriornis montana insolens*, collected by the author at Lake Junin, Peru, April 25, 1940. (Type in coll. of the author).

Diagnosis: This species presents all of the characters of the genus, as outlined by Clay, the short, wide head, with gular plate entire; dorsal Y-shaped suture; three thoracic sternal plates and median abdominal sternites, with spines at their posterolateral corners.

The head is not heavily pigmented, excepting the narrow frontal and occipital bands and the inner edge of the antennal fossae. The gular plate does not reach to the occipital margin and has bluntly pointed projections at the posterior corners; there are five long, slender, pustulated hairs along each side.

The thorax presents no unusual characters except that the sternal plates are perhaps more thickly set with bristles than is ordinarily the case. The legs are long, not especially thickened, and have unusually deep pigmentation.

The abdominal tergal and paratergal plates are very closely fused, so that there is no sharp line of demarcation between them, the line of fusion being shown by the slightly

heavier pigmentation of the pleurites. The tergites do not occupy the whole width of the segment, there being a conspicuous hyaline area on both sides along the sutures. The first four sternal plates do not lie under the tergites but overlies the sutures, but the last two are under the tergites (see fig.) The postero-lateral angles of the sternites are somewhat produced and rounded, and bear three spines, except on the The postero-lateral angles of the sternites are somewhat prominent genital sclerites, one on each side, but not connected. The eighth segment is large, rounded posteriorly, with a fringe of medium setae along the margin, while there are in addition, two rows of submarginal ventral setae, shorter and finer, which apparently fringe the lips of the vulva.

The species is represented by a single female, the type, the male being unknown. A single female, taken on *Muscisaxicola alpina grisea*, collected by the author at Cajamarquilla, Peru, is very close to this species in all head characters. In mounting this specimen the thorax and abdomen were badly distorted, so that they cannot be properly studied, and it seems best to place this female under *M. juninensis* for the present.

Measurements:

♀

	length	width
body	1.50	—
head { ant. fossae .....	.26	{ .49
{ temples		
prothorax .....	.16	.39
mesothorax .....	.175	.52
metathorax .....	.13	.62
abdomen .....	.325	.69

Machaerilaemus robertsi sp. nova.

Plate II, fig. 3.

Type, ♀ adult, from *Cnemarchus rufipennis*, collected by the author at Quirivilca, Peru, June 1, 1932. (Type in the coll. of the author).

Diagnosis: The gular plate is entire, with rounded anterior margin; blunt, thickened lateral spines, and with four long, slender, pustulated hairs on each side. The frontal margin of the head (between the antennal fossae) is undulating and slightly produced medially. The antennal fossae are large, bluntly angulated medially on the outside, and with the lateral margins but slightly divergent. The Y-shaped dorsal suture is prominent. There are two long hairs at the median angle of the antennal fossae and two long, thickened, pustulated hairs on the temples. The occipital band is incorrectly shown in the figure, it being very similiar to that of *M. insignis*, where the ventral bands of the occiput extend beyond the dorsal, and this portion is unpigmented. The occipital margin is strongly concave.

The thorax is of the conventional type for the genus, although the coxae differ slightly in shape from the other species.

The abdomen is large, oval in shape, and with the arrangement of the different sclerites as described under *juninensis*, and with similiar chaetotaxy. The genital plates are also exactly as shown in the figure of *juninensis*.

There are, in addition to the type, three female paratypes of this species.

Measurements:

♀

	length	width
body	1.47	—
head { ant. fossae .....	.28	{ .50
{ temples		
prothorax .....	.18	.41
mesothorax .....	.15	.52
metathorax .....	.10	.60
abdomen .....	.88	.80

Machaerilaemus bolivianus sp. nova.

Plate II, fig. 2.

Type, ♀ adult, from *Muscisaxicola capistrata borealis*, collected by the author at Callipampa, Lake Poopo, Bolivia, June 3, 1936. (Type in the coll. of the author).

Diagnosis: Similiar in general appearance to *M. robertsi*, but differs in size and proportions of head and thorax. The shape of the head is almost identical, as well as the gular plate, but the dark frontal band follows the margin of the head (not sub-marginal in median portions in *robertsi*), while the occipital band is also different. There are three strong, pustulated hairs on the temples, instead of two. The head is almost equal in length to *robertsi*, but considerably narrower, both at antennal fossae and at the temples (.475 and .586 against .50 and .62).

The prothorax is longer, but narrower, while the mesothorax is considerably wider. However the prothorax is very differently shaped in the anterior portion, and extends far under the head, with the median portion deeply incised (see fig.) The lateral wings are also obsolete. This shape of prothorax is unusual, the only other species I have seen which is similiar in this respect is the specimen which has been listed above under *M. maestus*. The present species is represented by a single specimen, the type.

Measurements:

♀

	length	width
body	1.35	—
head { ant. fossae .....	.27	.475
{ temples		
prothorax .....	.22	.39
mesothorax .....	.16	.61
metathorax .....	.13	(distorted)
abdomen .....	.86	(")

Machaerilaemus tachuris sp. nova.

Plate II, fig. 4.

Type, ♀ adult, from *Tachuris rubrigaster grandis*, collected by the author on Lake Poopó, Bolivia, June 4, 1936. (Type in coll. of the author).

Diagnosis: This species has the head very differently shaped from all other known forms, except *atrocephalus*, which it resembles in some respects, but it is much smaller, and much less pigmented. The front of the head, between the palpi, is narrow and rather pointed, with strongly protuberant antennal fossae, small temples, and *strongly convex* occipital margin. The gular plate is wider than long, with short lateral projections, and lies back of the middle of the head. The Y-shaped suture is prominent. A most unusual feature is present in the structure of the dorsal covering over the posterior portion of the head, which is much thickened and pigmented on each side of the posterior portion of the gular plate, while from these thickened areas it is deeply incised posteriorly, almost to the occipital margin (see fig.)

The prothorax is without lateral wings, has the lateral angles acute, and the whole segment is unusually short. The prosternal and mesosternal plates are present and normal, but the metasternal plate is absent.

The abdominal structure and chaetotaxy are practically the same as described for *juninensis*. The type, and only specimen, has lost many hairs from the head, so that I am not certain that the chaetotaxy as given in the figure is entirely correct.

Measurements:

		♀	
		length	width
body		1.34	—
head {	ant. fossae .....	.27	.423
	temples		
prothorax .....		.18	.38
mesothorax .....		.15	.44
metathorax .....		.105	.56
abdomen .....		.80	.71

Machaerilaemus atrocephalus sp. nova.

Plate II, fig. 5.

Type, ♀ adult, from *Asthenes modesta rostrata*, collected by the author at Lake Junin, Peru, April 18, 1930. (Type in coll. of the author).

Diagnosis: This species may be distinguished from all others treated in this paper (except *tachuris*) by the *strongly convex* shape of the occipital margin of the head, and by its very deep pigmentation. In this latter respect it bears a strong resemblance to Kellogg's figure of *maestus*, although the shape of the head and the location and shape of the gular plate are entirely different.

The front of the head is very flatly convex, with the frontal margin of the antennal fossae slightly undulating, while the two posterior corners of the fossae are sharply angulated, and with the sides convergent. The gular plate is of an unusual shape (see fig.) is set in the middle of the head, and has a large, semi-clear area between it and the occipital margin, in this respect resembling *tachuris*. The Y-shaped dorsal suture is absent, or else so closely fused that all trace of it has been lost.

The prothorax is unusually small, without lateral wings, and with the lateral angles rounded. The sternal abdominal plates in segments II to V are narrower than the tergites, not reaching to their posterior margin, the narrowest sternite being in segment II, with each succeeding sternite wider.

I am not entirely convinced that the host given above for this species is the correct one, although there is no real proof to the contrary. The genus *Asthenes*, as well as most *Furnariidae*, seem to be unusually free from Mallophagan parasites, while all of the other species of *Machaerilaemus* taken in Peru and Bolivia were from the *Tyrannidae*. On the other hand, *atrocephalus* is of quite a different type from the species taken on the *Tyrannidae*, and it may be possible that *Asthenes* is its true host. The only other type of bird

which could be considered as the host of *atrocephalus* would be some species of Finch, of which there are several around Lake Junin, but as previously stated, there is no real proof that *Asthenes* is not its true host, and it should remain as such until proof to the contrary is forthcoming.

Measurements:		♀	
		length	width
body		1.68	—
head { ant. fossae	}	.31	{ .50
temples			
prothorax .....		.17	.395
mesothorax .....		.15	.52
metathorax .....		.11	.586
abdomen		1.00	.69

Passonomedeia genus novum.

Genotype: *Passonomedeia hopkinsi* sp. nova.

Rather closely allied to *Goniodes*, as defined by Clay (P.Z.S., July, 1940, p. 2), with which genus it agrees in quite a number of characters, but differs radically in others.

Description of genus: Of medium size, with ♂ considerably larger than ♀, and with strongly developed sexual dimorphism, both in the antennae and in the shape of the head; head much wider than long, (almost double in ♂), with rounded *frons*, strongly developed clavi and laterally expanded temples; temples not produced either laterally or posteriorly to form sharp angles or points, although in the ♀ they are angulated laterally, but *not produced*. First segment of antennae in ♂ much enlarged, but without flap or hook; segment two longer than first, with *distal end produced into a point* on one side; third segment as long as second, very slender, strongly bent inward, and with distal end *not enlarged or hooked*; fourth segment very short and fifth

minute. (In *Goniodes* it is the *third* segment of the antennae which has the distal end produced into a long lateral hook, not the *second*, as in the present genus, in fact the entire antennal structure seems to be unique).

Prothorax short and broad, also the pterothorax, in the latter the width being more than four times the length; abdomen short and broad in both sexes, the ♂ with nine segments, the ♀ with but eight (as in *Goniodes*), although in the ♂ segment VIII is well developed, not appearing as lateral rudiments; pleural plates with a curiously complicated interlocking structure; tergal plates apparently continuous in ♂ but widely separated longitudinally, while in the ♀ they are broken medially (since the broad basal plate of the genital armature completely covers the median line of the abdomen it is not possible to be certain about this character in the ♂); four hairs present on the meso and meta-sternum, stronger and longer on the mesosternum. The genital armature is massive, and in some respects unique. The basal plate is very wide, strongly pigmented, and extends from the posterior margin of segment VII almost to the *posterior margin of the prothorax*. One of the few genera possessing a basal plate of such proportions is *Rhopaloceras*, although even in that genus this plate is not so long or broad. The paramers are also most unusual¹, being heavy and deeply pigmented, while the tips are sharply bent outward and backward, and end in rectangular plates, or flaps, the tips of which lie over the bases of the paramers. The endomeral plate is long, heavy, deeply pigmented and V-shaped, with the sides grooved, and with the ventral portion of the sclerite extending *under* the paramers, while the dorsal portion lies between them (see figure).

The ♀ is smaller than the ♂, has the antennae comparatively short and simple, with the temples much less expanded laterally and the antennal fossae almost wanting;

1.—The genus *Goniodes*, as now constituted, contains a bewildering variety of genital armatures, so that this character apparently does not possess the generic significance of other genera. Nevertheless, the genitalia of *Passonomea* are so unusual that I believe it may be used as a secondary generic character in this instance.

the last two abdominal segments contain a most complicated arrangement of ventral sclerites, difficult to describe, although the figure gives an accurate delineation of them.

Briefly, the genus *Passonomedeia* is separated from *Goniodes* by the shape of the head in both sexes, structure of ♂ antennae, unusual sexual dimorphism and ♂ genitalia. I believe it to be confined to the avian genus *Odontophorus*, but for the present it is represented only by the genotype.

Passonomedeia hopkinsi sp. nova.

Plate III. figs. 1, 2, 3 and 4.

Types, ♂ and ♀ adult, from *Odontophorus c. capueira*, collected by F. Flaumann at Nova Teutonia, Brazil, April, 1940. (Types in coll. of G.H.E. Hopkins).

Description of species: The salient points in the description of this species have already been given under the diagnosis of the genus, which need not be repeated.

In the ♂ the antennal fossae are deeply excavated, with the basal segment of the antennae attached at the center of the clavi in front, and on the edge of the fossa at the rear. There are few markings on the head, merely a narrow clypeal band encircling the *frons*, and rather narrow antennal bands extending from base of clavi to anterior mandibular condyle, as well as a narrow band around front of buccal cavity. But one medium hair on each side of *frons*, but about 5 short hairs on dorsal surface of preantennal area and 1 between the mandibles and antennal fossae.

The eye is not conspicuous, but bears a strong, quite long, hair; there is a single, fine short hair at the angle of the temple and two long, pustulated hairs on their posterior margin, and a third smaller one near the side of the prothorax.

The prothorax extends considerably beneath the head, with only a short, lateral, rounded portion exposed; the pos-

tero-lateral angle is sharp and somewhat produced; thoracic spiracle well developed, with a short dorsal hair at its inner edge.

Pterothorax with convex sides and rounded lateral angles bearing two long hairs, as well as two others on each side of the posterior margin. In the ♂ the dorsal, posterior margin is *flatly rounded* (mostly angulated in *Goniodes*), while in the ♀ it is angulated. The acetabular bars are very long and heavy, extending backward to the middle of the wide abdominal segment I, while the whole thorax is so short that only the first two pairs of coxae lie under it, the metasternum and 3rd pair of coxae lying entirely under segment I of the abdomen. The last abdominal segment is well developed, and extends considerably beyond the eighth. The tergites bear a row of rather short, fine hairs along their posterior margin, set more closely together in the median portion; there are no hairs in the postero-lateral angles of segments I to VI, but there are 2 in VII and VIII. In segments II to VI are 2 to 3 longish hairs set on the inner, posterior portion of the pleurite, while segment IX bears a fringe of hairs along its posterior margin. The legs are rather short and stout, with heavy spines on the tibiae, heavier and more numerous on 2nd and 3rd pairs; the femora are excavated to receive the folded tibiae.

In the ♀ the shape of the head differs radically from that of the ♂. The *frons* is more convex; there is a mere trace of the antennal fossae, while the temples are flatly convex both on the sides and posterior margin (also true of the ♂), and with the rather acute lateral angle bearing two long, strong hairs, set in a quite different position from those in the ♂ (see figures). The pleural plates are also quite differently shaped in the ♀, but the abdominal chaetotaxy is very similiar, except that there are fewer hairs on the tergites and a row of sternal hairs in median portion of segments II to VII.

Measurements:		♂		♀	
		length	width	length	width
body		1.98	—	1.69	—
head {	frons	—	.49	—	.50
	temples .....	.555	.91	.57	.87
	occiput .....	.51	—	.52	—
prothorax .....		.206	.54	.16	.467
pterothorax .....		.22	.78	.30	.77
abdomen		1.28	1.08	1.02	.955
antennae .....		.73	.216	.24	.065
basal plate		1.02	.26		
paramers .....		.27	.12		
endomeral plate .....		.217	.13		

The species is represented by 2♂♂ adult, 1♂ juv., and 4♀♀ (type series), while a single ♀ was taken two years previously by Plaumann from the same host. With the exception of a ♂ and ♀ paratype, the entire series will be returned to Dr. Hopkins, who very kindly sent to the author a quantity of specimens taken by Plaumann from this host, which includes, in addition to this fine new genus, a new species of *Eiconolipeurus* (genus in MS., but not published) and a series of a *Virgula* and *Menacanthus*, which are also probably new, and will be treated in a subsequent paper.

Genus FURNARICOLA genus novum.

Genotype: *Furnaricola acutifrons* sp. nova.

Small to medium sized ISCHNOCERA, parasitic chiefly on the avian family FURNARIIDAE, but also to same extent, at least, on the families DENDROCOLAPTIDAE and FORMICARIIDAE.

The genus bears a striking resemblance in many ways to the genus *Parricola*, at least to the single known species from the New World, described in this paper, and also in some ways to the *Rallicola* group.

The head is more or less triangular in shape, ranging from nearly equilateral to much longer than wide, with broad, rounded temples and tapering rapidly to the narrow *frons*, while the sides are usually (but not always) more or less

straight. The pre-antennal portion of the head is usually very similar to that of *Parricola exiguifrons*. The clypeal signature (if it may be called such) extends considerably beyond the marginal clypeal bands, and is usually surrounded by a suture, narrow and indistinct in most species, and not as a rule visible across the posterior end of the signature (except in *titicacae* and *cephalosa*). The signature is supported by the internal clypeal bands, which are attached at the inner side of the marginal bands, then pass inward to the anterior mandibular condyle, and from there curve around the bucal cavity and then extend straight forward along the sides of the signature.

The antennal bands are well marked, and are bent inward in the form of the letter V, inside of which are set the antennae; the mandibles are heavy and well chitinized; the pharyngeal sclerite and glands are present, though small; occipital bands present, though weakly pigmented; occipital signature also present.

Antennae similar in the sexes, 2nd. segment the longest; 3rd and 4th very short and subequal; 5th nearly as long as 2nd. The trabeculae of medium size, fixed, and faintly pigmented, usually pointed; eye rather prominent. Chaetotaxy of whole body rather sparse, and all hairs are short excepting one on the temple, one at lateral angle of pterothorax and two on each side of its posterior margin.

Prothorax small, more or less quadrangular; pterothorax somewhat larger, with more or less divergent sides and with posterior margin angulated medially.

Abdomen oval, of similar shape in both sexes, and with segment I of different shape from the remainder (sides straight); remaining segments with narrow, deeply pigmented pleurites, with strongly re-entrant heads; tergites and sternites continuous, closely fused with pleurites, and more or less uniformly pigmented, and sometimes with hyaline posterior margin. In at least one species the sternites of the ♀ are of slightly different shape, and do not reach to the pleurites.

Male genital armature somewhat resembling that of *Parricola*, with straight paramers, wide at base and with slender tips. On the inner margin of the paramers, at the end of the endomera, there is either a squarish angle, a rounded protuberance, or a considerable prong (an exception in *latacephala* and *heterocephala*, where this prong is separated near the base of the paramer, and extends backward along the sides of the endomerical plate). The endomera is small, simple, consisting of a single oval plate, with thickened sides, and with base inserted within end of basal plate. There are no tubercles at the inner corner of the base of the paramers, as in *Parricola*.

The female has the genital plate covering posterior portion of segment VII, with curving posterior margin extending under segment VIII, and fringed with short, stiff bristles (posterior margin angulated in *titicacae*). On each side of the ventral surface of segment VIII, at the anterior margin, is a small tubercle, from which arise two long, slender spines, extending diagonally backward and inward (see fig.)

A careful comparison between four species of *Rallicola* and two of *Parricola* (one from Europe) shows that the only real fundamental difference between the two genera lies in the dimorphic antennae of *Rallicola*, while in *Parricola* they are the same in the two sexes. *Furnaricola* differs from *Parri-*
cola in having both the tergites and sternites of the abdomen entire (not separated medially) in both sexes; in lacking the tubercle at the base of the paramers in the ♂; shorter paramers, sometimes with a prong on inner side, and in having a pronounced tubercle in segment VIII of the ♀, from which arise the two long, slender spines. It is remarkable that this genus, apparently abundant on the FURNARIIDAE, and at least present on the DENDROCOLAPTIDAE and FORMICARIIDAE, should resemble in so striking a manner the parasites of the Jacanas, which are so different taxonomically.

Furnaricola acutifrons acutifrons sp. nova.

Plate IV, figs. 1 and 2; Plate V, fig. 1.

Types, ♂ and ♀ adult, from *Synallaxis albescens perpallida*, collected by the author at Riohacha, Magdalena, Colombia, May 2, 1914. (Types in coll. of the author).

Diagnosis: The description of the genus, together with the figures given of the genotype, leave little to be added to the diagnosis of this species.

The head is much longer than wide, with front narrow and sides slightly concave. The sides of the prothorax are but slightly convex, and the pterothorax has the sides less divergent than any of the other known species of the genus.

The legs are comparatively small, with thickened femora, tibiae and tarsi, and well developed claws; all segments are rather deeply pigmented, and bear very few bristles or spines, one or two on femora and one on each side of apical portion of tibiae. The tergites and sternites completely cover the abdominal segments (except in VIII), are closely fused with the narrow, deeply pigmented pleurites, and are uniformly, though not deeply pigmented. The tergites extend further back than the sternites, overlapping them along their posterior margin. The abdominal spiracles are large and surrounded by a less deeply pigmented area; the thoracic spiracles are located in the prothorax, and are also conspicuous.

There is one short hair in posterior angle of prothorax; one short and one long (the latter pustulated) hair in the lateral angle of the pterothorax, and two long (one pustulated) ones on each side of the posterior margin, set close together (apparently a generic character, since all the known species are alike in this respect). There is a dorsal hair on each side of the median line of the posterior margin of the tergites of segments II to VII, and the same on the sternites in nearly the same position (not shown in figure of this species). The genital plate and chaetotaxy of segments VII and VIII are as given under the generic description (see fig.)

The male genital armature is very simple and needs no further explanation (see fig.) The species is represented by 1 ♂ and 7 ♀ ♀ (including the types).

Measurements:		♂		♀	
		length	width	length	width
body		1.53	—	1.71	—
head { frons	}	.43	{ .087	.46	{ .087
temples					
prothorax .....		.12	.217	.13	.225
pterothorax .....		.215	.29	.24	.30
abdomen .....		.89	.434	1.04	.48
antennae .....		.15	.03	.16	.03
basal plate .....		.15	.08		
paramers .....		.087	.065		
endomera		0.5	.025		

Furnaricola acutifrons subsimilis subsp. nova.

Types, ♂ and ♀ adult, from *Leptoxyura cinnamomea*, collected by the author at Fundacion, Dept. Magdalena, Colombia, Aug. 7, 1913. (Types in coll. of the author).

Diagnosis: Very close to *acutifrons*, although the hosts of the two races are generically distinct.

The measurements of the two forms are very similiar, most of the slight differences being easily within the limits of individual variation, with the exceptions of: slightly larger head and shorter and wider pterothorax in the ♀. In the genital armature of the ♂ we have the basal plate of the same size, but the paramers are wider and the endomera much narrower; the basal plate is less constricted in anterior portion, and the paramers are differently shaped, the apical portion being more curved inward, and the outer margin almost straight.

The differences between these two forms hardly seem worthy of recognition, and to separate them savors somewhat of hair-splitting, yet while the differences are small, they

seem to be constant, while their hosts are not all closely related. This race is represented by 7 ♂ ♂ and 10 ♀ ♀ (including the types, taken on two individual hosts).

Measurements:

	♂		♀	
	length	width	length	width
body	1.45	—	1.74	—
head { frons .....	.43	{ .087	.48	{ .09
{ temples				
prothorax .....	.13	.217	.13	.23
pterothorax .....	.195	.28	.217	.32
abdomen .....	.82	.43	1.06	.48
basal plate .....	.15	.08		
paramers .....	.08	.08		
endomera .....	.054	.046		

Furnaricola parvigenitalis sp. nova.

Plate IV, figs. 3 and 4; Plate V, fig. 2.

Types, ♂ and ♀ adult, from *Synallaxis erythrothorax*, collected by the author at Tres Zapotes, Veracruz, Mexico, Jan. 18, 1940. (Types in coll. U. S. Nat. Mus.)

Diagnosis: This species is closest to *F. a. acutifrons*, a logical condition, in-as-much at the two hosts are congeneric. Both sexes are considerably shorter in all measurements than *acutifrons*, but have the head about the same width at temples and with a narrower *frons*; the prothorax and pterothorax are also the same width, but shorter, as well as the abdomen.

The ♂ genital armature differs considerably. The basal plate has the anterior end wider than the posterior, with the lateral constriction near the posterior end (the reverse of *acutifrons*); the paramers are much shorter, but the same width (across the base), while the endomera is practically the same size, although of different shape (see fig.) The paramers are also very differently shaped, having the wide, basal portion about the same size, but the slender, tapering tips are much shorter, and straight (not curved).

The clypeal signature, while of same shape, is smaller, and the sides of the pre-antennal area are straight, and the temples less expanded laterally in posterior portion, while it is wider at the base of antennae, so that the whole lateral line of the head is quite convex, instead of straight. The prothorax has the sides decidedly convex, while the pterothorax is much more divergent. There are other unimportant minor differences. (Note: In the figure given of the ♂ of this species the abdomen is incorrectly drawn, in that segment VI has been entirely omitted, giving the abdomen a blunted appearance posteriorly, wholly at variance to the actual aspect).

Measurements:		♂		♀	
		length	width	length	width
body		1.39	—	1.59	—
head { frons	}	.41	{ .065 .34	.435	{ .055 .35
{ temples					
prothorax .....		.115	.21	.12	.22
pterothorax .....		.185	.285	.195	.30
abdomen .....		.80	.41	.955	.45
antennae .....		.14	—	.15	—
basal plate .....		.14	.075		
paramers .....		.066	.066		
endomera .....		.055	.023		

Furnaricola laticephala sp. nova.

Plate IV, figs. 5 and 6; Plate V, fig. 3.

Types, ♂ and ♀ adult, from *Cranioleuca subcristata*, collected by the author at Lagunita de Aroa, Venezuela, Dec. 20, 1910. (Types in coll. of the author).

Diagnosis: This is the smallest of the known species, that is, it is considerably shorter in most body segments, especially the head and abdomen, the latter being more elliptical in shape. The head is wide at the antennae, with the sides of the pre-antennal area concave; the temples are much less rounded on sides and rear, giving a decidedly squarish appearance to the back of the head.

The prothorax has the sides rounded; the pterothorax is divergent, but the sides are concave medially (not straight or convex as in the other species); the antennae are thicker in all segments.

The abdomen in the ♂ has the tergal plates entire, closely fused with the pleurites, and rather faintly pigmented, while the sternites in segments I to VI are widely separated laterally from the pleurites, continuous across the middle, rather heavily pigmented, and of unusual shape and position (see fig.) In the ♀ the sternites are not more heavily pigmented than the tergites, except along their posterior margin in segments V and VI. The genital plate in the ♀ has the posterior margin angulated medially (in all of the other species it is rounded).

The principal distinguishing character of this species is in the male genitalia. The basal plate appears to be very short (not clearly visible); the general shape of the paramers is similiar to that of *acutifrons*, though more slender in the basal portion, but there is a long, slender prong on the inner margin, beginning near the base of the paramer and running backward along each side of the endomera (see fig.) The endomeral plate is also of a completely different shape from the previously described species (see fig.). Represented by 3 males and 3 females, including the types.

Measurements:

	♂		♀	
	length	width	length	width
body	1.21	—	1.39	—
head { frons .....	.40	{ .078	.37	{ .075
{ temples				
prothorax .....	.115	.20	.125	.22
pterothorax .....	.17	.30	.19	.315
abdomen .....	.67	.42	.84	.48
antennae .....	.15	—	.13	—
paramers .....	.087	.074		
endomera .....	.06	.033		

Furnaricola titicacae sp. nova.

Plate IV, figs. 7 and 8; Plate V, fig. 4.

Types, ♂ and ♀ adult, from *Phleocryptes melanops schoenobaenus*, collected by the author at Desaguadero, Lake Titicaca, Peru, May 8, 1931. (Types in coll. of the author).

Diagnosis: This is the largest, and in some ways the most aberrant of the known species of the genus, especially in the structure of the clipeal region, mandibles, and segment I of the abdomen, while the male genitalia is nearest to that of *laticephala*, although quite different in detail.

The head is but little longer than wide, with rounded temples; the mandibles are heavy, but narrow at the condyles, somewhat as in *parvigenitalis*; the pharyngeal sclerite is of a different shape (see fig.) The most striking character, however, is the presence of a well developed hyaline flap encircling the front of the clypeal region (see fig.), and in the shape of the clypeal signature, which is *completely surrounded* by a hyaline suture, except for the internal clypeal bands, which are attached along its lateral margins.

According to some authors the presence of this hyaline flap and the suture surrounding the clypeal signature, would constitute a generic difference, but in the present instance I cannot see that it does, since all other fundamental generic characters are the same as in the remaining species of the genus.

The prothorax is small, with sides nearly straight; the pterothorax strongly divergent, with sides but slightly convex. In the abdomen we have segment I the *longest*, and of different shape from the remainder (in the other species it is shorter than segment II to IV); the shape of the re-entrant heads of the paratergals is also different (see fig.) The tergites are superimposed over the sternites, both are, to all appearances, entire and closely fused with the pleurites, and both are separated from each other at the sutures by a conspicuous hyaline area.

The ♂ genitalia have the basal plate as in *acutifrons*, and the paramers also of the same general pattern, except that they are narrower at their point of attachment with the basal plate, and widest in their median portion, where there is a short, bluntly pointed prong on the inner side. The endomeral plate bears some resemblance to that of *laticephala*, but is different from all of the other known species of the genus.

The female is very similar to the male in all particulars, except being larger. The genital plate has the posterior margin curved, as in most of the genus, but the fringing setae are fewer in number, longer, and more slender. The heavy spines at the sides of segment VIII are typical of the genus.

The species is represented by 2 ♂♂ and 6 ♀♀ (including the types), taken on two individual hosts, 2 ♂♂ and 2 ♀♀ from a bird shot on Lake Titicaca, and the remainder from another taken on Lake Poopo, Bolivia, June 7, 1936.

Measurements:

	♂		♀	
	length	width	length	width
body	1.52	—	1.73	—
head { frons .....	.40	{ .13	.445	{ .135
{ temples				
prothorax .....	.14	.22	.16	.228
pterothorax .....	.195	.326	.195	.35
abdomen .....	.90	.49	1.13	.586
antennae .....	.17	.03	.175	.03
basal plate .....	.16	.08		
paramers .....	.09	.07		
endomera .....	.05	.03		

Furnaricola chunchotambo sp. nova.

Plate VI, fig. 1.

Type, ♀ adult, from *Xyphorhynchus chunchotambo*, collected by the author at Puerto Yessup, Peru, Feb. 17, 1930. (Type in the coll. of the author).

Diagnosis: This species, represented by a single ♀ (the type), is the largest of the genus now known. The head is triangular in shape, very little longer than wide, and with the temples somewhat squarish, resembling *laticephala* in this respect.

The clypeal signature is narrowed apically (not expanded as in most of the other species), and differs in shape from all the other known forms of the genus.

The prothorax is decidedly quadrangular, very similar to that of *acutifrons*, but the pterothorax is very different, being quite short (but little longer than the prothorax) and with the sides strongly divergent and slightly sinuate.

The abdomen is elongated oval, with the pleurites narrow and having the heads less re-entrant than most species of the genus. The genital plate is small, curved, and fringed with short, stout bristles, while the two pairs of spines in segment VIII are small for the size of the body. The tergal plates are continuous, closely fused with the pleurites, and with a narrow hyaline border along the posterior margin. The sternites are difficult to differentiate, being seemingly entire and lying directly beneath the tergites, but are apparently more deeply pigmented in their median portion.

The chaetotaxy is very similar to the other species of the genus, with a few short dorsal and ventral hairs on the pre-antennal area of the head, and with one long, strong, pustulated hair on the temples, one short hair in the posterior angle of the prothorax; 2 short and 1 long in the lateral angle of the pterothorax, and with the usual pair of long hairs on each side of the posterior margin (apparently a generic character).

The legs are short and stout, with medium pigmentation, but with narrow pitchy bands along the outer margins of the

femora and tibiae. The large size, shape of head, clypeus and thoracic segments easily differentiate this species.

Measurements:

♀

	length	width
body	1.74	—
head { frons .....	.54	{ .055
{ at base of trabeculae		
{ temples		
prothorax .....	.15	.27
pterothorax .....	.21	.372
abdomen	1.00	.52
antennae .....	.185	.043

Furnaricola cephalosa sp. nova.

Plate VI. figs. 2 and 3.

Type, ♂ adult, from *Glyphorhynchus spirurus pectoralis*, collected by the author at Guapiles, Costa Rica, March, 1903. (Type in coll. of the author).

Diagnosis: This is one of the smallest species of the genus, and is further distinguished by having the head decidedly wider than long, and with the general outline of the sides of the head markedly convex at the trabeculae.

The clypeus is short, and has the signature *completely* surrounded by a narrow hyaline suture (as in *titicacae*), but has no hyaline flap around the front of the head as in that species. The head is very large in porportion to the rest of the body, with the abdomen (at least in the ♂) unusually small. The thorax is typical of the genus, as is also the abdomen, both as to structure of sclerites and chaetotaxy. The tergal and sternal plates are entire (across the abdomen), both closely fused with the pleurites, but the former are not superimposed over the latter, the sternites being bent into a slight arc, with the posterior margin concave, while the posterior portion of the sclerite seems to be more heavily chitinized, presenting a darker band across the median portion of the tergites.

The genital armature is close to that of *parvigenitalis* in the shape of the basal plate and paramers, but the endomera is quite distinct from all of the other species of the genus, excepting that of *heterocephala* (described below), but all parts differ in detail from the other species.

The species may be distinguished by the shape of the head and clypeus; presence of hyaline suture around signature, and by the very small abdomen. It is represented by two males, including the type.

Measurements:		♂ type
	length	width
body	1.18	—
head { frons .....	.39	{ .043
{ at base of trabeculae		
{ temples		
prothorax .....	.16	.225
pterothorax .....	.175	.31
abdomen .....	.61	.41
antennae .....	.15	.032
basal plate .....	.17	.05
paramers .....	.076	.065
endomera .....	.047	.029

Furnaricola heterocephala sp. nova.

Plate VI, figs. 4, 5 and 6.

Types, ♂ and ♀ adult, from *Gymnocichla, c. cheiroleuca*, collected by the author near Jimenez, Costa Rica, March, 1903. (Types in coll. of the author).

Diagnosis: This species is somewhat aberrant in the structure of the clypeal region, differing considerably in this character from the other known species of the genus, but on the other hand, the thoracic and abdominal structure, as well as the ♂ genitalia are all typical of the genus *Furnaricola*, the ♀ having the same curved, fringed genital plate and the two pairs of slender spines in segment VIII.

There is no trace of suture, either along the sides or across the posterior margin of the clypeal signature, while the marginal and internal clypeal bands are fused at their apical ends, and the former are *unbroken*. The sides of the head are nearly straight, the temples rounded, and the eyes protuberant.

The prothorax is decidedly quadrangular, rather small, and with sides but little divergent and slightly *concave*. The pterothorax has both the sides and the two halves of the posterior margin very straight, the latter with the usual pair of long hairs in the median portion.

The abdomen is a slightly elongated oval; the pleurites are deeply pigmented (except in segments I and II, and all have deeply re-entrant heads. The tergal plates are entire, faintly pigmented, and cover the entire segment. The sternites are also entire (transversely), but are considerably narrower than the tergites, with a hyaline posterior margin, except on segment VII. The legs are short and stout, the tibiae about equal in length to the femora.

The genital armature in the ♂ is very similar to that of *F. laticephala*, especially the paramers, which are bifurcated; the basal plate is very short, while the endomera is reduced to a simple oval plate, thickened along the sides, and with the base inserted within the end of the basal plate.

The female is but slightly larger than the male, with the abdomen of the same shape, and with the structure of the abdominal sclerites the same. The genital plate however, lies entirely within segment VII, not having the fringed posterior margin encircling the anterior portion of segment VIII, as is usually the case in this genus.

The species is represented by two males and six females.

Measurements:		♂		♀	
		length	width	length	width
body		1.38	—	1.45	—
head { frons	}	.43	.108	.45	.11
{ at base of trabeculae .....			.293		.32
{ temples .....			.39		.40
prothorax .....		.15	.228	.16	.24
pterothorax .....		.195	.337	.205	.35
abdomen .....		.73	.456	.82	.50
antennae .....		.185	.033	.185	.038
basal plate .....		.15	.07		
paramers .....		.095	.065		
endomera .....		.065	.04		

Parricola exiguifrons sp. nova.

Plate V, figs. 5, 6 and 7.

Types, ♂ and ♀ adult, from *Jacana spinosa gymnostoma*, collected by the author at Tres Zapotes, Dept. Veracruz, Mexico, March 21, 1940. (Types in coll. U. S. Nat. Mus.)

As far as I have been able to learn, the only described species of this genus is the genotype, *P. sulcata* (Piag.) from a species (?) of *Parra*.

The new form is very different from *P. sulcata*, and there is no question but that it belongs in the genus *Parricola*, having all of the characters of the male genital armature ascribed to that genus, as well as the peculiar curving spines on the 8th abdominal segment of the female.

The head is very long, with rather wide temples, and tapering to a narrow front; the clypeal signature is parallel-sided, with rounded front and rear ends, longer than wide, and extends beyond the head proper by about one third of its length.

The antennal bands are narrow, not deeply pigmented, and curved inwards basally to the posterior condyle of the mandibles, then extend forward unbroken to the sides of the clypeal signature. The signature itself is entirely sur-

rounded by a hyaline suture, except at the internal clypeal bands. The temporal bands are narrow, rather deeply pigmented, and end at the antennal fossae, where they bend inward and join the base of the antennal bands. The trabeculae are small, pointed, and faintly pigmented; the eyes seem to be absent. The antennae is slightly larger in the male sex, with the 1st segment longer in the ♀ (a generic character), so that the 1st and 2nd segments are almost equal (2nd the longest; 3 and 4 short and equal, with the 5th slightly longer than the 4th), while in the female the 1st segment is but little longer than the 3rd. The internal clypeal bands begin near the anterior condyle of the mandibles, curve forward and inward to a point in line with the sides of the signature, then run straight forward along its sides.

The prothorax is quadrilateral, with convex sides; the pterothorax is somewhat longer, with slightly divergent sides and angulated posterior margin.

The abdomen is elongated oval, the first segment with straight sides; the angles are rounded but protruding, with the pleurites of segments II to VI deeply re-entering into the anterior segment; the pleural plates are narrow and deeply pigmented; the tergal plates are divided medially by a narrow clear space, likewise from the pleurites at either side, while the sternal plates are continuous, but divided from each other by transverse hyaline bands, which become broader posteriorly.

The genital armature is rather unique. The basal plate is rather short and broad, constricted laterally in the median portion and with chitinized bands along the margins. The paramers are almost straight, thickened basally and tapering apically to a long, slender tip. At their base, just inside the chitinized edge of the basal plate is an extension in the form of an oval tubercle (this tubercle is not located in the same place as in the genus *Aptericola*). Between the bases of the paramers lies either a simple, thin, endomeral plate, thickened at the sides, or else a sac, with rounded, tapering end,

supported by narrow lateral endomeres. (The last interpretation is probably correct, which agrees with Harrison's diagnosis of the genus).

The female is larger than the male, but with head and body the same shape; the pleural plates are more re-entering anteriorly; the tergal plates more widely separated medially, but united with the pleurites; the sternal plates are narrower, with wider hyaline strips between them. Segment VIII contains the curious, long, slender spines at its sides, on the ventral surface, and a curving line of short bristles across its middle, one of the important generic characters as given by the author.

Measurements:	♂		♀	
	length	width	length	width
body	1.35	—	1.62	—
head .....	.42	.27	.456	.347
prothorax .....	.09	.18	.135	.215
pterothorax .....	.16	.25	.205	.30
abdomen .....	.76	.35	.97	.466
antennae .....	.16	.03	.177	.03
basal plate .....	.17	.055		
paramers .....	.168	.112		
endomera .....	.087	.061		

Quadriceps semifissa mexicana subsp. nova.

Plate V, figs. 8 and 9.

Types, ♂ and ♀ adult, from *Himantopus mexicanus*, collected by the author at Tlacotalpam, Veracruz, Mexico, Feb. 6, 1940. (Types in coll. of U. S. Nat. Mus.)

Diagnosis: This subspecies of *semifissa* is very close to the nominate form in many ways, differing however, in smaller measurements in some segments of the body, but not in others, especially in the ♂, particularly in the genital armature.

The *frons* is narrower in both sexes (.14 against .175), while the width of the head at the base of the trabeculae is about the same, while the width at the temples is less in the

♂ and the same in the ♀. The antennae are considerably shorter in both sexes (.20 against .25).

The prothorax is shorter in both sexes, but of the same width, while the pterothorax is both shorter and narrower in both ♂ and ♀. The abdomen is shorter and narrower in the ♂, but only narrower in the ♀.

The basal plate is practically the same size, but the paramers are slightly longer (.065 against .051), while the endomera is considerably longer and wider (.087 by .12 against .06 by .08).

This parasite of *Himantopus mexicanus* has been considered by previous authors to be the same as that infesting the european host *Himantopus h. himantopus*, but a careful comparison between my mexican series and a fine pair of *Q. semifissa* taken on the type host in Uganda by Dr. Hopkins, proves beyond a doubt that they are at least subspecifically distinct.

Quadriceps semifissa (and its races) is probably one of the most aberrant species of the genus *Quadriceps* in the structure of the clypeal signature and the genital armature. The normal clypeal signature in this genus has the posterior border rounded, and seldom, if ever, extending behind the clypeal suture, while in *semifissa* the posterior portion of the signature is produced into a long, slender, pointed spur which extends backward to the posterior edge of the mandibles (see fig.)

The type of genitalia in *semifissa* is also different from any other species of the genus which I have seen. Another fact in connection with the matter, is, that a *perfectly typical* species of *Quadriceps* (*Q. hemichroa* (Nit.) is usually found on the same host with *semifissa*, not only on the european bird, but on the american species, *H. mexicanus*.

All of these facts lead me to suspect that *semifissa* may not be congeneric with *hemichroa*, in other words, it may not be a *Quadriceps*. However, my knowledge of this group is not sufficient to enable me to do more than make the above observations, for whatever they may be worth.

Measurements:

Q. s. semifissa

	♀		♂	
	length	width	length	width
body	2.04	—	2.56	—
head { frons .....	.53	{ .174 .28 .36	.575	{ .175 .31 .395
trabeculae				
temples				
prothorax .....	.175	.24	.195	.29
pterothorax .....	.26	.35	.282	.41
abdomen	1.24	.55	1.65	.66
antennae .....	.25	.04	.25	.04
basal plate .....	.26	.117		
paramers .....	.051	—		
endomera .....	.06	.08		
clyp. signature .....	.24	.13		

Measurements:

Q. semifissa mexicana

	♀		♂	
	length	width	length	width
body	1.94	—	2.54	—
head { frons .....	.50	{ .14 .28 .347	.58	{ .135 .326 .40
trabeculae				
temples				
prothorax .....	.15	.24	.175	.29
pterothorax .....	.23	.326	.26	.38
abdomen	1.18	.48	1.63	.57
antennae .....	.195	.04	.205	.04
basal plate .....	.25	.11		
paramers .....	.065	—		
endomera .....	.087	.12		
clyp. signature .....	.24	.12		

Quadriceps semifissa andina subsp. nova.

Types, ♂ and ♀ adult from *Recurvirostra andina*, collected by the author at Llica, S.W. Bolivia, Feb. 8, 1938 (alt. 12,000 feet). (Types in coll. of the author).

Diagnosis: This race is recognized chiefly by the shorter, broader head, much shorter clypeal signature, wider thorax; and shorter and wider abdomen.

The frons is slightly wider than in *mexicana*, but narrower than in *semifissa*; about the same width at the traberulae as both of the other races, but wider at the temples than either; the antennae are midway between the other two races in length.

The basal plate is about the same size, also the paramers the same length as in *mexicana*, but the endomera is smaller than in *semifissa*.

Measurements:		♂		♀	
		length	width	length	width
body		1.78	—	2.28	—
head {	frons .....	.467	.15	.52	.15
	base of trabeculae..		.28		.31
	temples .....		.37		.415
prothorax .....		.16	.28	.18	.30
pterothorax .....		.205	.347	.28	.39
abdomen		1.04	.55	1.47	.63
antennae .....		.217	—	.228	
basal plate .....		.30	.12		
paramers .....		.07	.11		
endomera .....		.056	.064		
clyp. signature .....		.195	.12		

*List of the avian hosts with their respective parasites
treated in the present paper*

PARRIDAE

Jacana spinosa gymnostoma.... (*Parricola exiguifrons* n. sp.)

RECURVIROSTRIDAE

Himantopus h. himantopus.... (*Quadriceps s. semifissa* (Nit.)

" *mexicanus*..... (" *semifissa mexicana* n. subsp.)

Recurvirostra andina..... (" " *andina* n. subsp.)

FORMICARIIDAE

Gymnocichla c. cheiroleuca..... (*Furnaricola heterocephala* n. sp.)

Thamnophilus doliatus mexicanus (*Machaerilaemus laticorpus* (Carriker)

DENDROCOLAPTIDAE

- Glyphorhynchus spirurus pecto-*
ralis (*Furnaricola cephalosa* n. sp.)
Xyphorhynchus chunchotambo.. (" *chunchotambo* n. sp.)

FURNARIIDAE

- | | |
|--|--|
| <i>Asthenes modesta rostrata</i> | (<i>Machaerilaemus atrocephalus</i> n. sp.) |
| <i>Cranioleuca subcristata</i> | (<i>Furnaricola laticephala</i> n. sp.) |
| <i>Leptoxeyra cinnamomea</i> | (" <i>acutifrons subsimilis</i> n. subsp.) |
| <i>Phleocryptes melanops schoenobaenus</i> | (" <i>titicacae</i> n. sp.) |
| <i>Synallaxis albenscens perpallida</i> . (| " <i>a. acutifrons</i> n. sp.) |
| " <i>erythrothorax</i> | " <i>parvigenitalis</i> n. sp.) |

TYRANNIDAE

- | | |
|---|--|
| <i>Agriornis montana insolens</i> | (<i>Machaerilaemus juninensis</i> n. sp.) |
| <i>Cnemarchus rufipennis</i> | (" <i>robertsi</i> n. sp.) |
| <i>Muscisaxicola capistrata borealis</i> | (" <i>bolivianus</i> n. sp.) |
| <i>Ochthoeca rufipectoralis tectri-</i> | |
| <i>cialis</i> | (" <i>insignis</i> n. sp.) |
| <i>Pogonotriccus peocilotis</i> | (" <i>poecilotis</i> n. sp.) |
| <i>Tachuris rubrigaster grandis</i> | (" <i>tachuris</i> n. sp.) |

FRINGILLIDAE

- Pipilo maculatus oregonus*..... (" (?) *maestus* (Kell. & Chap.)

ODONTOPHORINAE

- Odontophorus capueira* (*Passonomedeia hopkinsi* n. sp.)

Explanation of Plates

PLATE I

- Fig. 1.—*Machaerilaemus laticorpus*..... (head and thorax of ♀).
 " 2.—" "..... (antennae and palpi of ♀).
 " 3.—" "..... (♂ genitalia).
 " 4.—" *poecilotis*..... (body of ♀).
 " 5.—" *juninensis*..... (body of ♀).

PLATE II

- Fig. 1. — *Machaerilaemus insignis* (head and thorax of ♀).
 " 2. — " *bolivianus* (" " " " ").
 " 3. — " *robertsi* (" " " " ").
 " 4. — " *tachuris* (" " " " ").
 " 5. — " *atrocephalus* (body of ♀).

PLATE III

- Fig. 1.—*Passonomedia hopkinsi* (body of ♂).
 " 2.— " " (head of ♀).
 " 3.— " " (tip of abdomen, ♀).
 " 4.— " " (♂ genitalia).

PLATE IV

- Fig. 1.—*Furnaricola a. acutifrons* (body of ♂).
 " 2.— " " (♂ genitalia).
 " 3.— " *parvigenitalis* (body of ♂).
 " 3.— " " (♂ genitalia).
 " 5.— " *laticephala* (body of ♂).
 " 6.— " " (♂ genitalia).
 " 7.— " *titicacae* (body of ♂).
 " 8.— " " (♂ genitalia).

PLATE V

- Fig. 1.—*Furnaricola a. acutifrons* (tip of abdomen, ♀).
 " 2.— " *parvigenitalis* (" " " ").
 " 3.— " *laticephala* (" " " ").
 " 4.— " *titicacae* (" " " ").
 " 5.—*Parricola exiguifrons* (body of ♂).
 " 6.— " " (abdomen of ♀).
 " 7.— " " (♂ genitalia).
 " 8.—*Quadriceps semifissa mexicana* (head of ♂).
 " 9.— " " " " (♂ genitalia).

PLATE VI

- Fig. 1.—*Furnaricola chunchotambo* (body of ♀).
 " 2.— " *cephalosa* (body of ♂).
 " 3.— " " (♂ genitalia).
 " 4.— " *heterocephala* (♂ body).
 " 5.— " " (♂ genitalia).
 " 6.— " " (tip of abdomen, ♀).

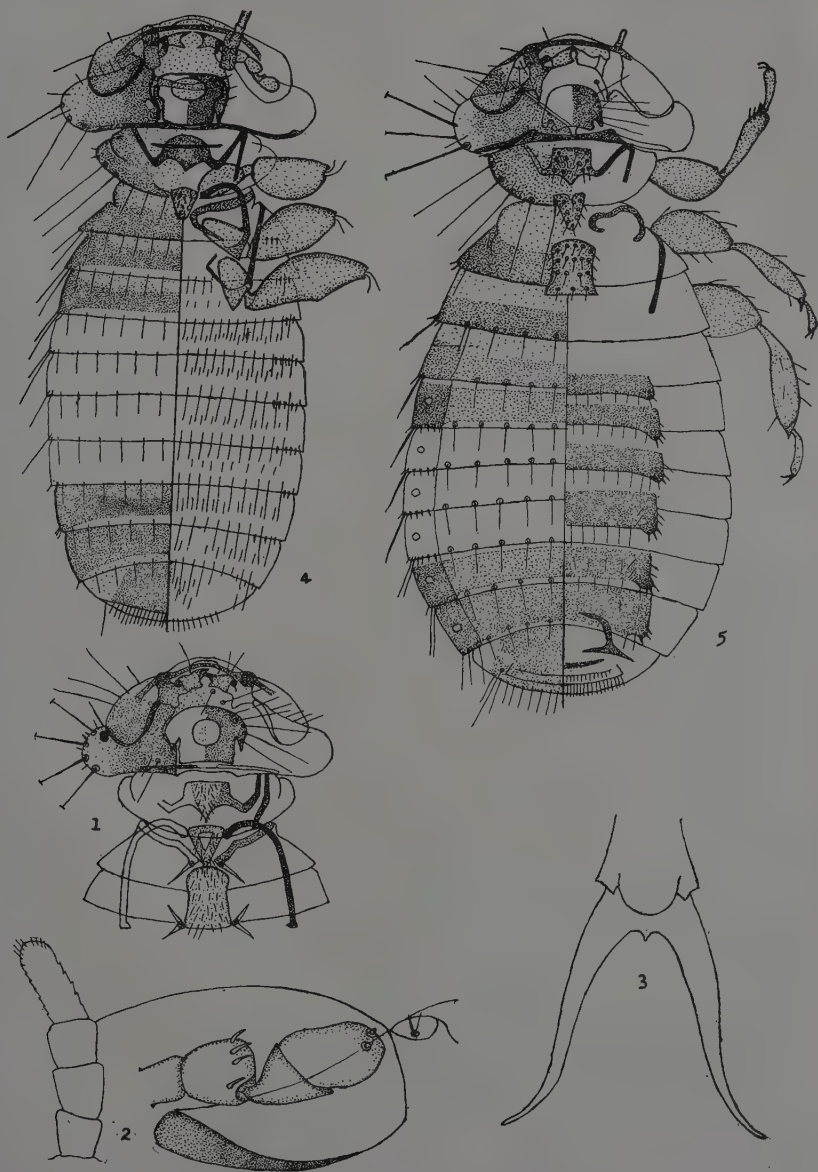


PLATE I

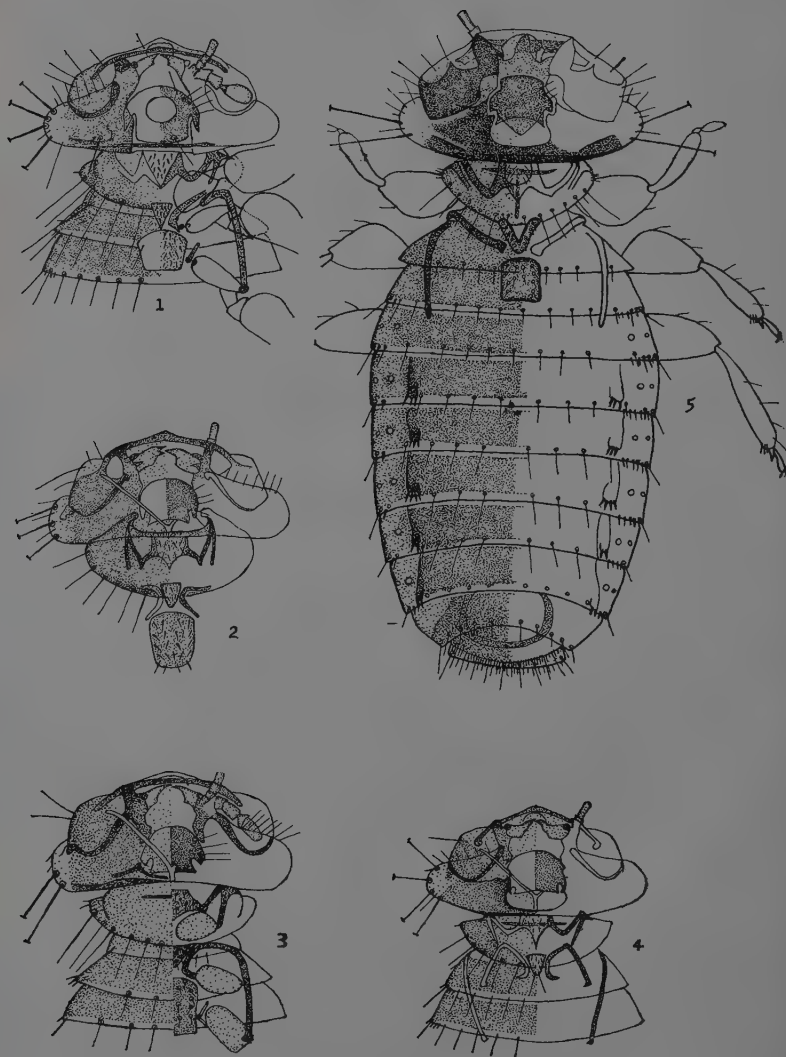


PLATE II

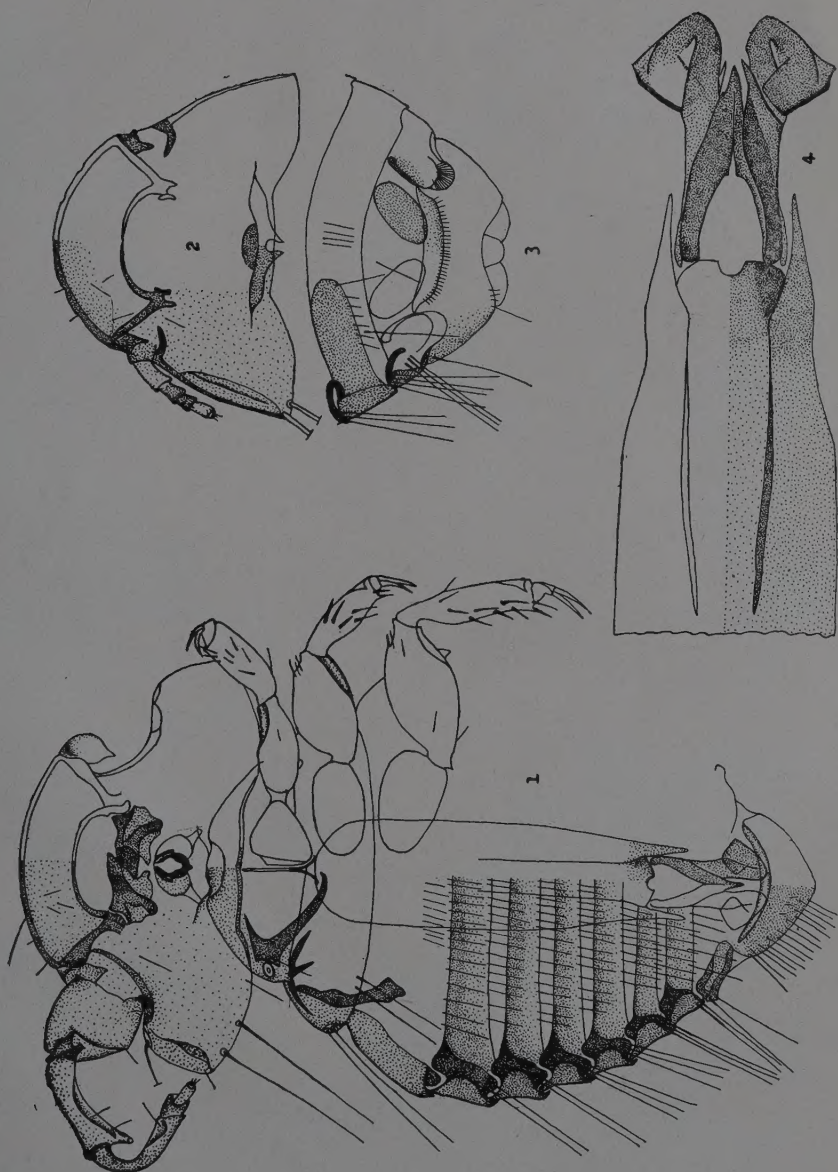


PLATE III

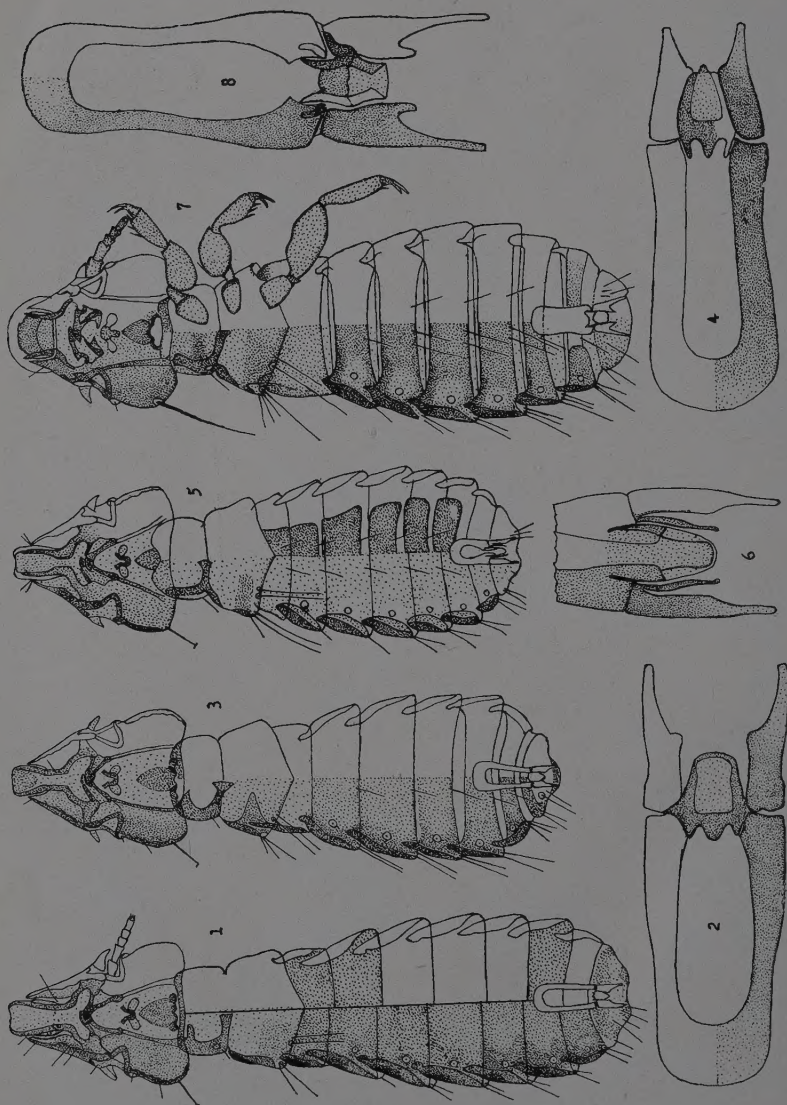


PLATE IV

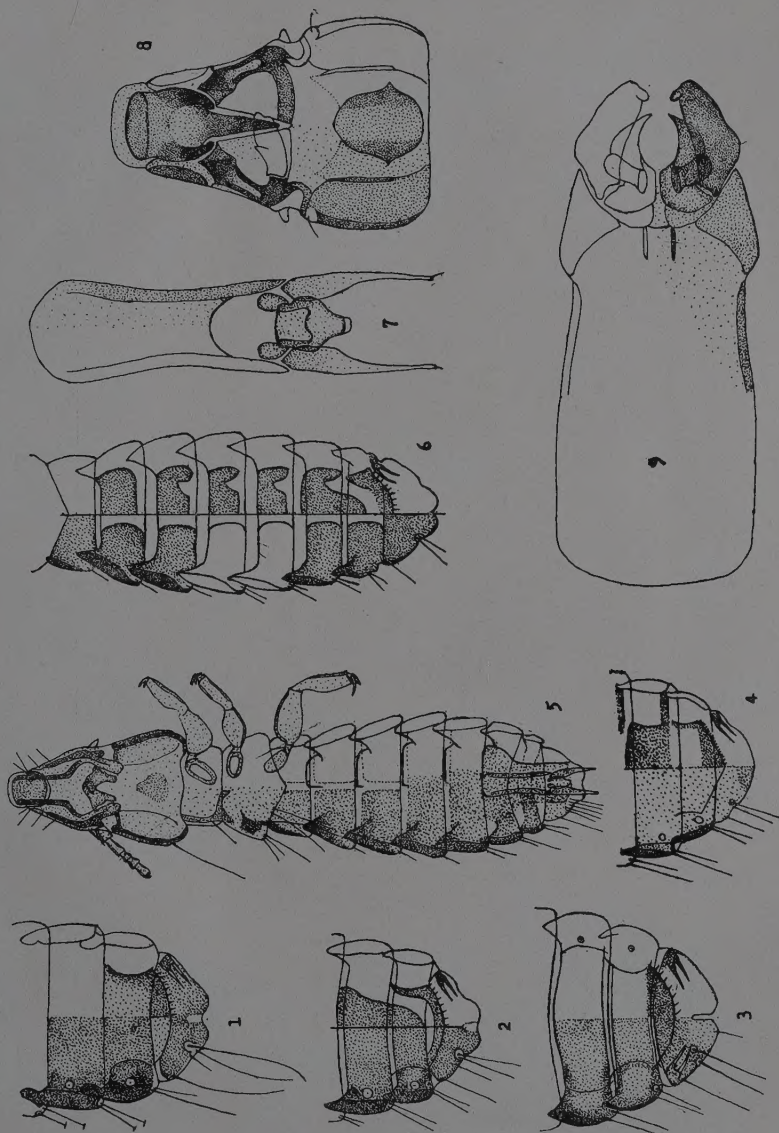


PLATE V

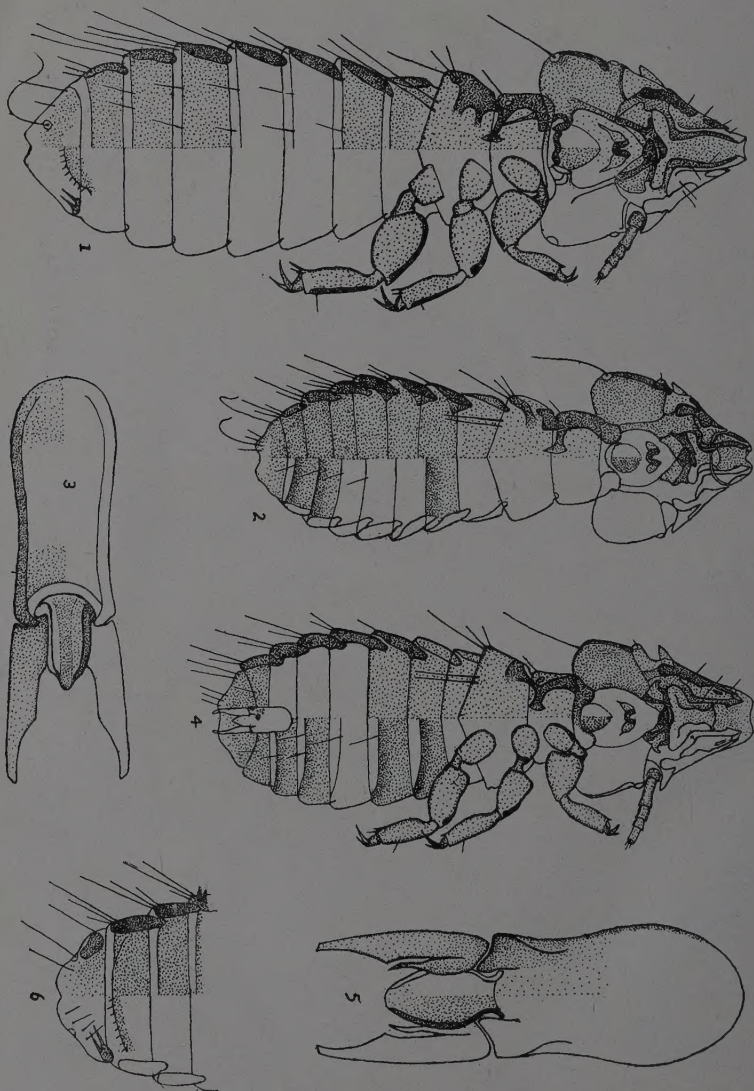


PLATE VI